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(54) Title: **INTEGRATED GLOBAL LAYOUT AND LOCAL MICROSTRUCTURE TOPOLOGY OPTIMIZATION APPROACH FOR SPINAL CAGE DESIGN AND FABRICATION**

(57) Abstract: A method of designing an interbody fusion cage is disclosed. The method uses topology optimization algorithms to define the structural layout and the inner microstructures of the cage. After the structural layout is defined, a density distribution process is performed. Based on the density distribution, the inner microstructures of the cage are defined.

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